from the apparatus when being emptied, as a result of which the serial, automated opening procedure must be interrupted.

Accordingly it is the objective of the present invention to create a suction system operating at comparatively low power and allowing adequate filtration of the suction air and offering automated emptying of the collecting container. This objective is attained by apparatus defined by the features of claim 1.

Because the collecting container is fitted with a closing device at its lower side, opening this closing device allows emptying the material collected therein in the form of caps that were screwed off or pulled off. Advantageously with respect to simple design and reliable operation, the closing device should be in the form of a flap. When such a flap constitutes at least part of the base of the collecting container, a large cross-sectional aperture of the collecting container will have been attained.

An especially simple and operationally reliable design is attained in that the closing device includes a substantially horizontal pivot shaft and in that a counterweight dimensioned relative to said pivot shaft is provided which shall keep the closing device closed or nearly so even in the absence of a partial vacuum. Preferably during operation, the closing device is directly loaded with caps of sample containers and is kept closed by the partial vacuum, and in case of elimination of partial vacuum, the sealing system shall pivot under the weight of one or more caps into an open position. The emptying of the collecting container is especially well reproducible if the said device constitutes a chute in its open position, in particular in the zone building the base wall, the caps then dropping by their own weight.

Advantageously the blower shall be centrifugal because then allowing low power consumption and low noise with good suction resulting in high partial vacuum at small suction cross-sections and hence high flows in the suction duct. In particular as regards medical purposes,

the apparatus shall be advantageously fitted with a filter which, for a particle size of 0.2 µm will filter at a rate of about 95 %. To secure simple maintenance, this filter may be a filter cartridge mounted at the blower's suction side.

As regards a method to implement the apparatus to the extent described above, advantageously the blower shall be shut OFF to empty the collecting container, whereupon the closing device weighed down by the caps pivots into the open position, the caps dropping from the closing device which thereafter is rotated by the counterweight into a position at least almost closed again. In such a design emptying can be implemented merely by shutting OFF the blower. If following emptying the blower again is turned ON and the closing device is moved on account of the partial vacuum into its closed position, the system of the invention again is operational. The partial vacuum assures the position will be closed.

A particular advantageous application of the apparatus so far described above is in being a part of an automated opening apparatus for human or animal liquid samples.

An embodiment of the present invention is discussed below in relation to the drawing.

Fig. 1 is a perspective of a suction system of the invention.

Fig. 1 is a perspective seen obliquely from below of the suction system 1 of the invention in its installed configuration. Fig. 1 shows a suction system of the invention fitted with a suction duct 1 which issues into a collecting container 2. The collecting container 2 supports at its top side a filter cartridge 3 and at its bottom side a closing flap 4 that simultaneously constitutes the collecting container's base wall. A centrifugal blower 2 is mounted at the top of the filter cartridge 3, and accordingly the already filtered exhaust air is fed to this blower 5.

The closing flap 4 shown in its open state in Fig. 1 comprises a flat side 7 able to fully cover a lower aperture 8 of the collecting container 2. The flat side 7 is bounded at two

mutually opposite sides by guide elements 9 which run perpendicularly to said flat side 7. Moreover the closing device 4 comprises a support 10 receiving a pivot shaft 11 mounted in the region of a U-shaped segment 12. The U-shape 12 supports also a counterweight 13 situated the end zone of the U-shape 12 which is away from the flat side 7, said counterweight 13 being displaceably affixed in longitudinal slots 15 by means of tightening screws 14. The pivot shaft in turn is mounted into extensions 16 of the collecting container 2, and as a result the closing device 4 is pivotably mounted at a given position on the collecting container 4. In practice the above described suction system may be integrated for instance into automated sample handling apparatus for the purpose of automatically opening blood samples or other sample container. In this design the suction duct passes through a tube 20 to a means taking off the caps. The remaining suction system is mounted in such manner that the filter cartridge 3 shall be installed underneath the base plate of the sample handling apparatus and moreover space shall be provided underneath the collecting container 2 to receive a waste receptacle or bag.

The system described so far operates as follows:

The counterweight 13 of the closing device 4 is adjusted in such a way that when said device is at rest, that is when the blower is shut OFF, and the collecting container 2 is devoid of any caps, the flap 4 shall very nearly or entirely close the aperture 8. Thereupon the blower 5 is activated and generates a partial vacuum in the collecting container 2 whereby the flat side 7 is aspirated against the aperture 8 and is reliably retained there. The blower's suction side communicates with the suction duct 1 and the tube 20 which in turn issues into an omitted means opening the sealing caps. Because the filtering cartridge 3 is connected to the suction side of the blower 5, the entire, aerosol-charged space will be subjected during operation to a partial vacuum and as a result any leaks may entail an intake of secondary air but will not release aerosols. The